

ABC of learning and teaching in medicine

Teaching large groups

Peter Cantillon

Lecturing or large group teaching is one of the oldest forms of teaching. Whatever their reputation, lectures are an efficient means of transferring knowledge and concepts to large groups. They can be used to stimulate interest, explain concepts, provide core knowledge, and direct student learning.

However, they should not be regarded as an effective way of teaching skills, changing attitudes, or encouraging higher order thinking. Large group formats tend to encourage passive learning. Students receive information but have little opportunity to process or critically appraise the new knowledge offered.

How can lectures be used to maximise learning and provide opportunities for student interaction? This article will supply some of the answers and should help you to deliver better, more interactive lectures.

Getting your bearings

It is important to find out as much as possible about the context of the lecture—that is, where it fits into the course of which it is part.

An understanding of the context will allow you to prepare a lecture that is both appropriate and designed to move students on from where they are.

Helping students to learn in lectures

An important question for any lecturer to consider when planning a teaching session is, “how can I help my students to learn during my lecture?” There are several different techniques you can use to aid student learning in a large group setting.

Helping your students to learn

- Use concrete examples to illustrate abstract principles
- Give handouts of the lecture slides, with space to write notes
- Give handouts with partially completed diagrams and lists for the students to complete during or after the lecture
- Allow for pauses in the delivery to give students time to write notes
- Check for understanding by asking questions or by running a mini quiz

Planning your lecture

It is important to distinguish between the knowledge and concepts that are essential (need to know) and those which, though interesting, are not part of the core message (nice to know).

The aims of the lecture should be clearly defined (“what do I hope to achieve with this lecture?”). These will help to define the teaching methods and the structure. If, for example, the purpose of the lecture is to introduce new knowledge and concepts, then a classic lecture structure might be most appropriate.

On the other hand, if the purpose is to make the students aware of different approaches to a particular clinical problem, a



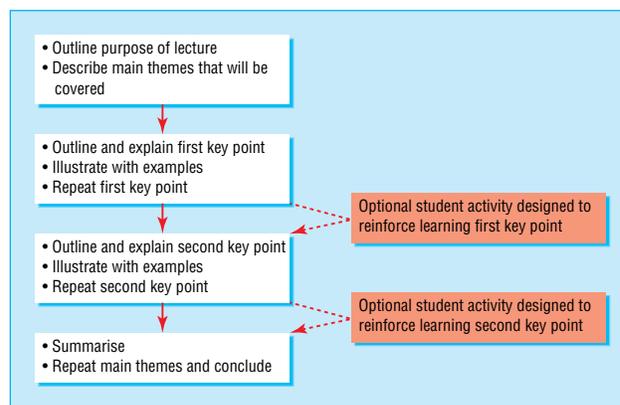
A lecturer holds forth ...

What you need to know before planning a lecture

- How your lecture fits into the students' course or curriculum
- The students' knowledge of your subject—try to get a copy of the lecture and tutorial list for the course
- How the course (and your lecture) will be assessed
- The teaching methods that the students are accustomed to

The successful teacher is no longer on a height, pumping knowledge at high pressure into passive receptacles ... he is a senior student anxious to help his juniors.

William Osler (1849-1919)



Example of a lecture plan with a classic structure

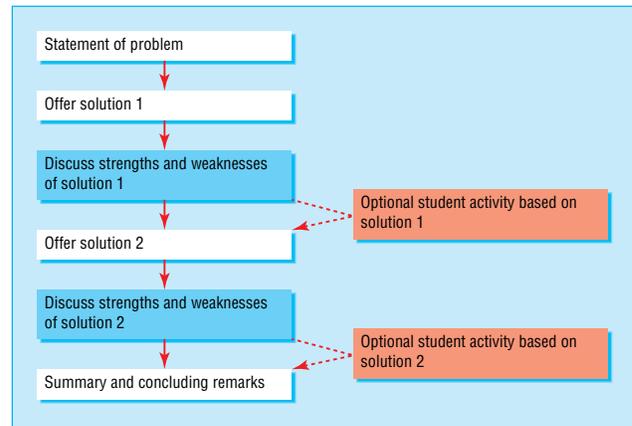
problem oriented design in which alternative approaches are presented and discussed might be a more appropriate format.

Choosing teaching media

When you have selected the content of the lecture and placed it into a working structure, the next consideration is how to deliver the message. Which teaching media should be used (for example, slides, overheads, handouts, quizzes)? The most appropriate media will differ depending on the venue, class size, and topic.

Choosing the medium for delivering the lecture

- Which teaching media are available at the teaching venue?
- Which teaching media are you familiar with? (It is not always appropriate to experiment with new media)
- Which medium will best illustrate the concepts and themes that you want to teach the students?
- Which medium would encourage students to learn through interaction during your lecture?



Example of a lecture plan with a problem oriented structure

Getting started

In the first moments of a lecture it is important that the students are given some sense of place and direction. Thus a brief summary of the previous lecture and an indication of the major themes and learning objectives for the current session provide both you and the students with a relatively easy start. If you are working with a new group it may be useful to indicate the ground rules for the session—for example, “switch off mobile phones,” or “ask questions at any time.”

Encouraging students to interact

Students learn well by “doing.” Yet there is an understandable tendency for students to regard lectures as an opportunity to sit back, be entertained, and “soak up” the learning. However, you can use various methods to encourage students to take a more active part in the learning process.

Students’ attention (and recall) is best at the beginning and end of a lecture. Recall can be improved by changing the format of your lecture part way through. It is also important when planning a lecture to think about activities and exercises that will break up the presentation.

Ask questions

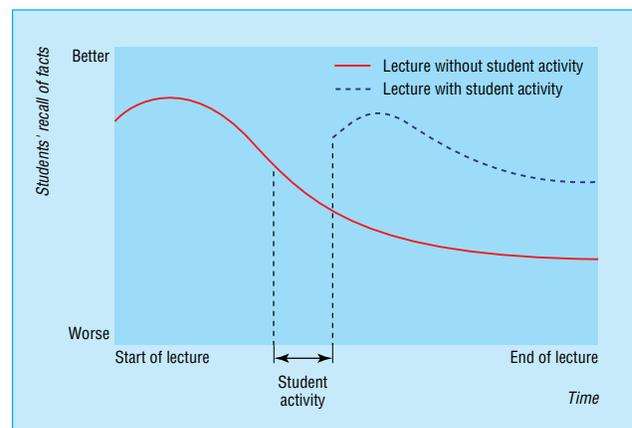
It is useful to ask questions of the group at various stages in the lecture, to check comprehension and promote discussion. Many lecturers are intimidated by the silence following a question and fall into the trap of answering it themselves. Wait for the answers to come. It takes time for students to move from listening to thinking mode. A simple tip is to count slowly to 10 in your head—a question is almost certain to arrive.

Get students to ask you questions

An alternative to getting students to answer questions is to ask them to direct questions at you. A good way of overcoming students’ normal fear of embarrassment is to ask them to prepare questions in groups of two or three. Questions can then be invited from groups at random. When asked a question, you should repeat it out loud to ensure that the whole group is aware of what was asked. Seeking answers to the question from other students, before adding your own views, can increase the level of interaction further.

Handouts

- Handouts can encourage better learning if they allow students more time to listen and think
- Handouts should provide a scaffold on which students can build their understanding of a topic
- Handouts should provide a summary of the major themes while avoiding an exhaustive explanation of each
- Handouts can be used to direct further learning, by including exercises and questions with suggested reading lists



Graph showing effect of students’ interaction on their ability to recall what they have heard in a lecture. Adapted from Bligh, 2000 (see “Recommended reading” box)

“Tell me, and I forget. Show me, and I remember. Involve me, and I understand”

Chinese proverb

Brainstorming

Brainstorming is a technique for activating the students' knowledge or current understanding of an issue or theme. The lecturer invites answers to a question or problem from the audience and writes them, without comment, on a board or overhead. After a short period, usually about two or three minutes, the lecturer reviews the list of "answers" with the class. The answers can be used to provide material for the next part of the lecture or to give students an idea of where they are before they move on. By writing answers in a way that can be seen by everyone in the audience, you allow the students to learn from each other.

Buzz groups

Buzz groups also encourage interaction. They consist of groups of two to five students working for a few minutes on a question, problem, or exercise set by the lecturer. Buzz group activity is a useful means of getting students to process and use new information to solve problems. At the end of the buzz group session, the teacher can either continue with the lecture or check the results of the exercise by asking one or two groups to present their views. Remember that in an amphitheatre lecture hall, students can sit on their own desks to interact with the students behind them.

Mini-assessments

Mini-assessments and exercises are used in lectures to help students to recognise gaps in their learning and to encourage them to use new material in practice. Brief assessments can also allow the lecturer to measure how well the messages are being understood. Students could be asked, for example, to complete a brief, multiple choice questionnaire or a "one-minute" paper. The timing of quizzes and exercises will depend on what is required. An assessment of prior learning would be best at the start of a lecture, whereas an estimate of learning from the current session might be best carried out towards the end of the lecture.

How to end your lecture

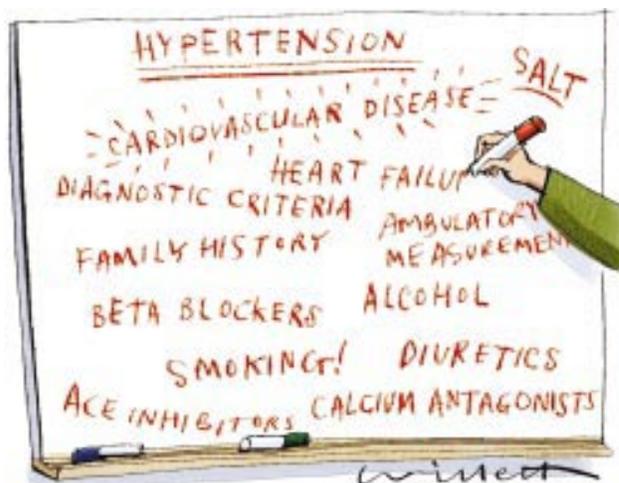
At the end of a lecture it is important to summarise the key points and direct students toward further learning. You may present the key points on a slide or overhead. Alternatively, you may go through the main headings on a handout. Students are encouraged to learn more about a subject if they are set tasks or exercises that will require them to look further than the lecture notes for answers and ideas. The end of a lecture is also a common time for questions. Students may find the use of a one-minute paper a useful tool to help them to identify concepts and impressions that need clarification.

Evaluating your lecture

Practice does make perfect, but the process of developing as a lecturer is greatly helped if some effort is made to evaluate performance. Evaluation involves answering questions such as "how did I do?" or "what did the students learn?"

A lecture can be evaluated in different ways. If the students are to be used as a source of feedback, the following methods are useful:

- Ask a sample of the students if you can read their lecture notes—this exercise gives some insight into what students have learned and understood
- Ask for verbal feedback from individual students
- Ask the students to complete a one-minute paper
- Ask the students to complete an evaluation questionnaire.



"One-minute" paper worksheet

Name: _____

Date: _____

Lecture title: _____

Directions: Take a moment to think about the lecture you have just attended, and then answer the following questions.

1. What was the most important thing you learned in today's lecture?

2. What question remains uppermost in your mind at the end of today's lecture?

3. What was the "muddiest point" in today's lecture?

Example of a one-minute paper

Please rate the lecture on the following items

	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
Clear				
Interesting				
Easy to take notes from				
Well organised				
Relevant to the course				

Example of an evaluation form focusing on the lecture. Adapted from Brown et al, 2001 (see "Recommended reading" box)

If you want to evaluate your teaching style and delivery, peers can be a useful source of feedback:

- Ask a colleague to observe part or all of a lecture and provide feedback afterwards. It is important to inform the observer what aspects of the lecturing process you want evaluated—for example, clarity, logical flow, effectiveness of the media used
- Videotape the lecture for private viewing, and arrange a joint viewing with a colleague later.

Lectures are still a common teaching method in both undergraduate and postgraduate medical education. Their continued popularity is due to the fact that they represent an effective and efficient means of teaching new concepts and knowledge. This article has emphasised the importance of good lecture planning and of the inclusion of student interaction to ensure effective learning.

Recommended reading

- Newble DI, Cannon R. *A handbook for medical teachers*. 4th ed. Dordrecht, Netherlands: Kluwer Academic, 2001.
- Gibbs G, Habeshaw T. *Preparing to teach*. Bristol: Technical and Educational Services, 1989.
- Bligh DA. *What's the use of lectures?* San Francisco: Jossey-Bass, 2000.
- Brown G, Manogue M. AMEE medical education guide No 22: refreshing lecturing: a guide for lecturers. *Medical Teacher* 2001;23:231-44.

BMJ 2003;326:437-40

Please rate the lecturer on the following items

	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
Was enthusiastic				
Was clearly audible				
Seemed confident				
Gave clear explanations				
Encouraged participation				

Example of an evaluation form focusing on the lecturer rather than the lecture. Adapted from Brown et al, 2001 (see "Recommended reading" box)

The ABC of learning and teaching in medicine is edited by Peter Cantillon, senior lecturer in medical informatics and medical education, National University of Ireland, Galway, Republic of Ireland; Linda Hutchinson, director of education and workforce development and consultant paediatrician, University Hospital Lewisham; and Diana F Wood, deputy dean for education and consultant endocrinologist, Barts and the London, Queen Mary's School of Medicine and Dentistry, Queen Mary, University of London. The series will be published as a book in late spring.

Lesson of the week

Epistaxis: an overlooked cause of massive haematemesis in cirrhosis

Shawinder S Johal, Andrew S Austin, Stephen D Ryder

Epistaxis should be considered as a cause of massive haematemesis in patients with cirrhosis

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The national audit of acute upper gastrointestinal haemorrhage reported an overall incidence of acute upper gastrointestinal haemorrhage in the United Kingdom of 103 cases per 100 000 adults a year. Varices have been identified as the source of blood loss in 8% of patients aged less than 60 years, and mortality among these patients is four times the overall mortality for the age group in patients with haematemesis.¹

The most dramatic presentations often occur in patients with chronic liver disease. Variceal bleeding is a life threatening complication of cirrhosis, and survival is closely related to failure to control haemorrhage or early rebleeding, which occurs in as many as 50% of patients.² In cases of suspected variceal bleeding, immediate treatment with agents such as terlipressin or octreotide is recommended, followed within 12 hours by upper gastrointestinal endoscopy, which is essential for accurate diagnosis and allows variceal sclerotherapy or band ligation.³ Endoscopic diagnosis can be difficult when views are obscured by blood. Nevertheless, a diagnosis of variceal haemorrhage is acceptable when a venous spurt is seen or there is fresh blood in the lower oesophagus in the presence of varices. In about half of cases there is no active bleeding; variceal haemorrhage is indicated by the presence of a "white nipple sign" (a plug of platelet

fibrin on a varix) or when varices are the only lesion identified.^{4 5}

We describe two patients with alcoholic liver disease and haematemesis whose bleeding was not controlled by endoscopic treatment. Delayed diagnosis of severe epistaxis led to prolonged haemodynamic instability and further decompensation.

Case reports

Case 1

A 45 year old woman with alcohol induced cirrhosis (Child's-Pugh class C) and idiopathic thrombocytopenic purpura presented with shock after fresh haematemesis. On admission she had a haemoglobin concentration of 24 g/l, platelets $10 \times 10^9/l$, and prothrombin time 16.0 s (control 10.0 s). She was resuscitated with transfusion of whole blood, fresh frozen plasma, and platelets. Variceal bleeding was suspected, and she was given an infusion of octreotide.

Gastroscopy showed a large volume of fresh blood restricting the view of the oesophagus and stomach. No source of bleeding was identified. The patient's history indicated that variceal bleeding was the most likely cause of blood loss, and a Sengstaken-Blakemore tube was inserted.